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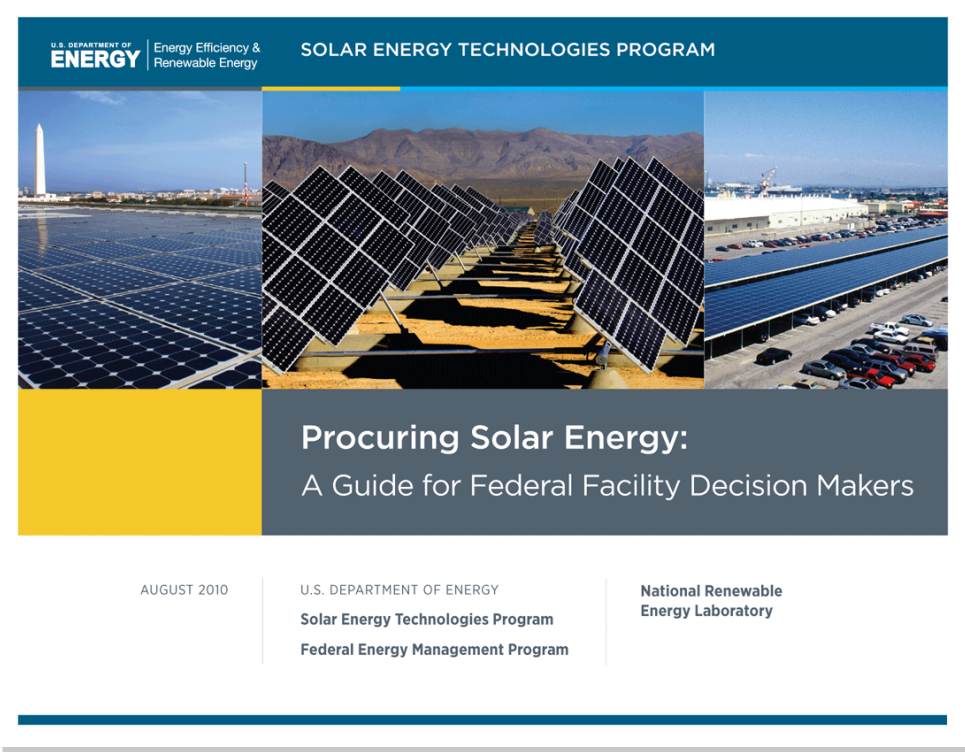
· Dallas Convention Center ·

Introduction:
Procuring Solar Energy: A Guide for Federal Facility Decision Makers

What is the Federal Guide to Solar?

Audience & Purpose

- The manual is designed for federal facilities managers, procurement officers and project managers.
- Introduces the value of solar projects for various agency targets, goals and requirements.
- Understanding preliminary solar site screening and the feasibility studies.
- Guides you through the major steps for solar projects planning and execution.



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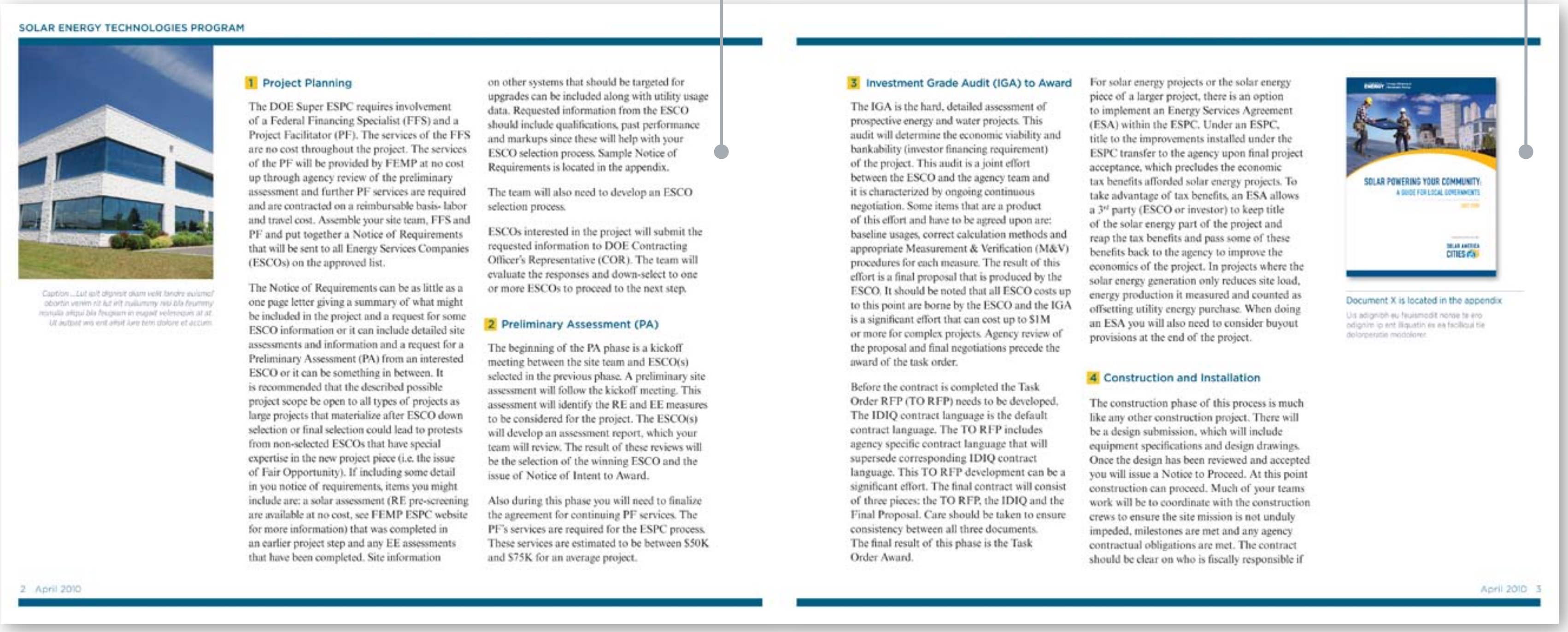
What is the Procuring Solar Energy Guide?

A basic overview of the solar project process at federal sites in a concise, easy to understand, and step-by-step format.

Detailed information and sample documents for specific tasks are referenced with Web links or included in the manual's appendix.



SOLAR ENERGY TECHNOLOGIES PROGRAM

1 Project Planning

The DOE Super ESPC requires involvement of a Federal Financing Specialist (FFS) and a Project Facilitator (PF). The services of the FFS are no cost throughout the project. The services of the PF will be provided by FEMP at no cost up through agency review of the preliminary assessment and further PF services are required and are contracted on a reimbursable basis- labor and travel cost. Assemble your site team, FFS and PF and put together a Notice of Requirements that will be sent to all Energy Services Companies (ESCOs) on the approved list.

The Notice of Requirements can be as little as a one page letter giving a summary of what might be included in the project and a request for some ESCO information or it can include detailed site assessments and information and a request for a Preliminary Assessment (PA) from an interested ESCO or it can be something in between. It is recommended that the described possible project scope be open to all types of projects as large projects that materialize after ESCO down selection or final selection could lead to protests from non-selected ESCOs that have special expertise in the new project piece (i.e. the issue of Fair Opportunity). If including some detail in you notice of requirements, items you might include are: a solar assessment (RE pre-screening are available at no cost, see FEMP ESPC website for more information) that was completed in an earlier project step and any EE assessments that have been completed. Site information on other systems that should be targeted for upgrades can be included along with utility usage data. Requested information from the ESCO should include qualifications, past performance and markups since these will help with your ESCO selection process. Sample Notice of Requirements is located in the appendix.

The team will also need to develop an ESCO selection process.

ESCOs interested in the project will submit the requested information to DOE Contracting Officer's Representative (COR). The team will evaluate the responses and down-select to one or more ESCOs to proceed to the next step.

2 Preliminary Assessment (PA)

The beginning of the PA phase is a kickoff meeting between the site team and ESCO(s) selected in the previous phase. A preliminary site assessment will follow the kickoff meeting. This assessment will identify the RE and EE measures to be considered for the project. The ESCO(s) will develop an assessment report, which your team will review. The result of these reviews will be the selection of the winning ESCO and the issue of Notice of Intent to Award.

Also during this phase you will need to finalize the agreement for continuing PF services. The PF's services are required for the ESPC process. These services are estimated to be between $50K and $75K for an average project.

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3 Investment Grade Audit (IGA) to Award

The IGA is the hard, detailed assessment of prospective energy and water projects. This audit will determine the economic viability and bankability (investor financing requirement) of the project. This audit is a joint effort between the ESCO and the agency team and it is characterized by ongoing continuous negotiation. Some items that are a product of this effort and have to be agreed upon are: baseline usages, correct calculation methods and appropriate Measurement & Verification (M&V) procedures for each measure. The result of this effort is a final proposal that is produced by the ESCO. It should be noted that all ESCO costs up to this point are borne by the ESCO and the IGA is a significant effort that can cost up to $1M or more for complex projects. Agency review of the proposal and final negotiations precede the award of the task order.

Before the contract is completed the Task Order RFP (TO RFP) needs to be developed. The IDIQ contract language is the default contract language. The TO RFP includes agency specific contract language that will supersede corresponding IDIQ contract language. This TO RFP development can be a significant effort. The final contract will consist of three pieces: the TO RFP, the IDIQ and the Final Proposal. Care should be taken to ensure consistency between all three documents. The final result of this phase is the Task Order Award.

For solar energy projects or the solar energy piece of a larger project, there is an option to implement an Energy Services Agreement (ESA) within the ESPC. Under an ESPC, title to the improvements installed under the ESPC transfer to the agency upon final project acceptance, which precludes the economic tax benefits afforded solar energy projects. To take advantage of tax benefits, an ESA allows a 3rd party (ESCO or investor) to keep title of the solar energy part of the project and reap the tax benefits and pass some of these benefits back to the agency to improve the economics of the project. In projects where the solar energy generation only reduces site load, energy production it measured and counted as offsetting utility energy purchase. When doing an ESA you will also need to consider buyout provisions at the end of the project.

4 Construction and Installation

The construction phase of this process is much like any other construction project. There will be a design submission, which will include equipment specifications and design drawings. Once the design has been reviewed and accepted you will issue a Notice to Proceed. At this point construction can proceed. Much of your teams work will be to coordinate with the construction crews to ensure the site mission is not unduly impeded, milestones are met and any agency contractual obligations are met. The contract should be clear on who is fiscally responsible if

SOLAR POWERING YOUR COMMUNITY: A GUIDE FOR LOCAL GOVERNMENTS

Document X is located in the appendix

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Overall Solar Project Process

1 Identify Needs & Goals

2 Assemble Your On-site Team

3 Solar Screening

4 General Project Considerations

5 Select Financing/ Contracting Option

6 Execute Selected Financing/Contracting Process

- Agency Funded Project
- Power Purchase Agreement (PPA) Project
- Energy Savings Performance Contract (ESPC)
- Utility Energy Services Contract (UESC)
- Enhanced Use Lease (EUL)

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Background

Federal Requirements

- Energy Policy Act of 2005
- Executive Order (E.O.) 13423, Strengthening Federal Environmental, Energy, and Transportation Management
- Energy Independence and Security Act of 2007
- Executive Order 13514, Federal Leadership in Environmental, Energy, and Economic Performance

Assume an Agency Wide Solar Assessment

- Responsibility for renewable energy targets at agency level
- Able to select most promising sites to develop

1. Identify Needs & Goals

Why considering/doing a solar project?

- Your agency must meet renewable energy targets
- You have appropriations for improving your facility
- You think it is a smart option for addressing your site's needs (depending on site conditions, there can be many smart reasons to implement a solar project)
- You are looking to achieve some credits toward LEED certification

Goals

- Maximize on-site solar energy production (particularly within a restricted budget)
- Maximize return on investment
- Meet a minimum annual solar energy production target
- Maximize GHG reduction

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2. The Team

PART I: PLANNING | **PART II: EXECUTION**

DIRECTION >> | **STAFFING >>** | SITE EVALUATION >> | CONSIDERATIONS >> | FINANCING >> | IMPLEMENTATION >>

Identify Needs & Goals → **Assemble an On-site Team** → Evaluate the Solar Site Screening → Consider these Requirements and Recommendations → Make a Decision About Financing/ Contracting → Implement Financing/ Contracting Process

People to consider for on-site project team

- Energy Manager
- Facilities Manager
- Contracting Officer
- Attorney
- Budget Officer
- Real Estate Officer
- Environmental Officer
- Sustainability Officer
- Safety Officer

Success Factors

- Project Champion
- Contracting Officer and Attorney with strong leadership characteristics
- Team alignment, dedication and creativity

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3. Solar Assessment

PART I: PLANNING | PART II: EXECUTION

DIRECTION >> | STAFFING >> | SITE EVALUATION >> | CONSIDERATIONS >> | FINANCING >> | IMPLEMENTATION >>

Identify Needs & Goals → Assemble an On-site Team → **Evaluate the Solar Site Screening** → Consider these Requirements and Recommendations → Make a Decision About Financing/ Contracting → Implement Financing/ Contracting Process

Solar Screening Provides

- Estimated system size
- Estimated production (kWh/yr or Btu/yr)
- Estimated cost
- Preliminary economic analysis
- Preliminary evaluation of roofing and structural integrity

Feasibility Study Provides

- More precise and detailed solar screening analysis
- Utility interconnection analysis
- Recommended technologies and applications based on specific site conditions

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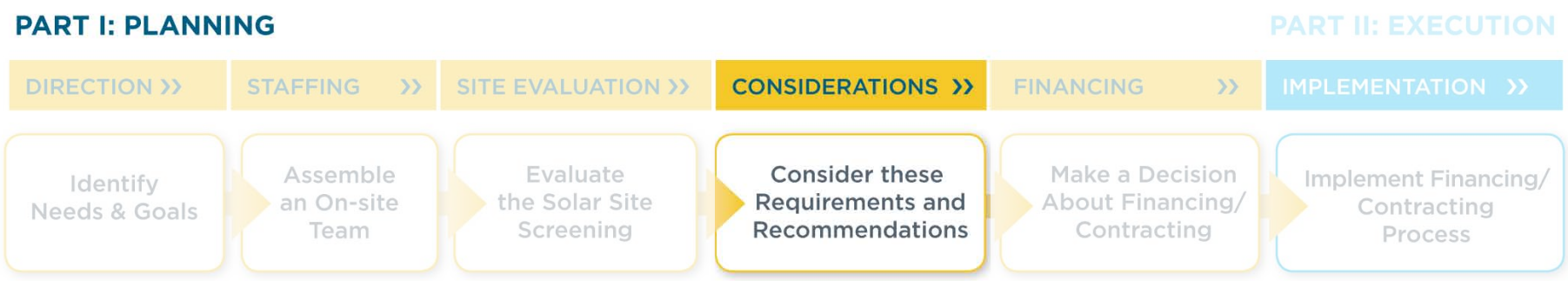
4. General Project Considerations



Considerations

- Utility Interaction
- National Environmental Protection Act
- Site Master Plan Review
- Requirements for Meeting Renewable Energy Targets
- Project Incentives
- Historic Building Issue
- Computer Network Connectivity
- Buy American Act

5. Financing/Contracting Options

Agency Funded Project

A project for which funds have been earmarked for the outright purchase of a project, in this case a solar energy project. The government will own the system, its energy production and all the attributes of the system.

Power Purchase Agreement (PPA) Project

A private entity (usually a group of developers, construction, and finance companies) installs, owns, operates, and maintains customer-sited (behind the meter) renewable energy generation equipment. The site purchases electricity or thermal energy through a long-term contract with specified energy prices. Payment is based on actual energy (kWh or therms) delivered to the site.

Energy Savings Performance Contract (ESPC)

A no-upfront-cost contracting method. An energy services company (ESCO) incurs the cost of implementing energy conservation measures (ECMs) and is paid from the energy, water, and operations savings resulting from these ECMs. The ESCO also maintains the ECMs and guarantees the energy savings.

Utility Energy Services Contract (UESC)

Allows a “serving” utility to provide an agency with comprehensive energy/water efficiency improvements and demand reduction services. The utility may partner with an ESCO to provide the installation but the contract is between the federal agency and the “serving” utility.

Enhanced Use Lease (EUL)

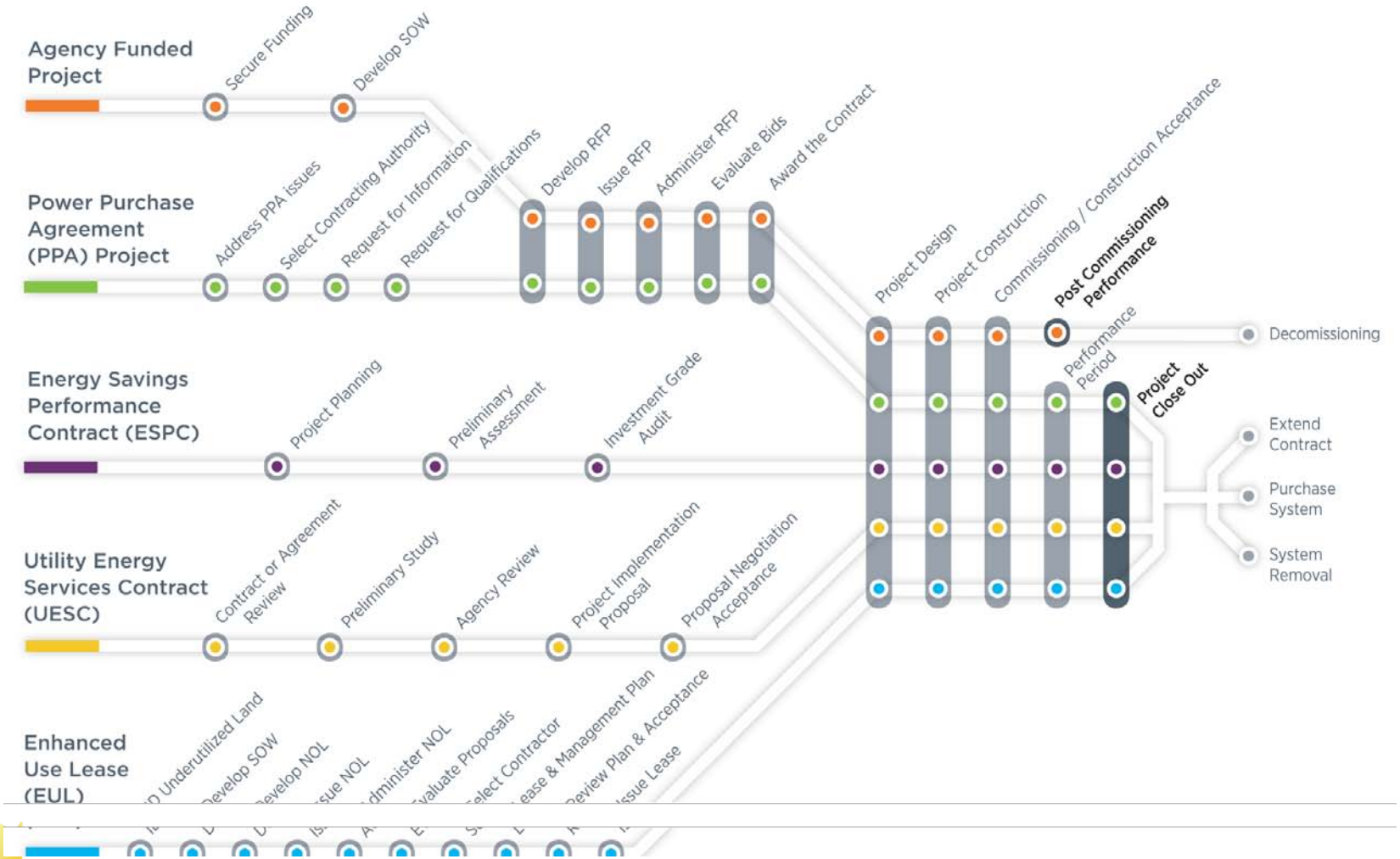
A real estate agreement with a focus on under-utilized land. The lease is competed to prospective developers, and payment can be cash and/or in-kind consideration. The value of the lease is used to determine the amount of consideration. EUL is typically used for large projects whose size is greater that the site load.

Part II. Execute a Solar Project

PART I: PLANNING

PART II: EXECUTION

DIRECTION ›› | STAFFING ›› | SITE EVALUATION ›› | CONSIDERATIONS ›› | FINANCING ›› | IMPLEMENTATION ››



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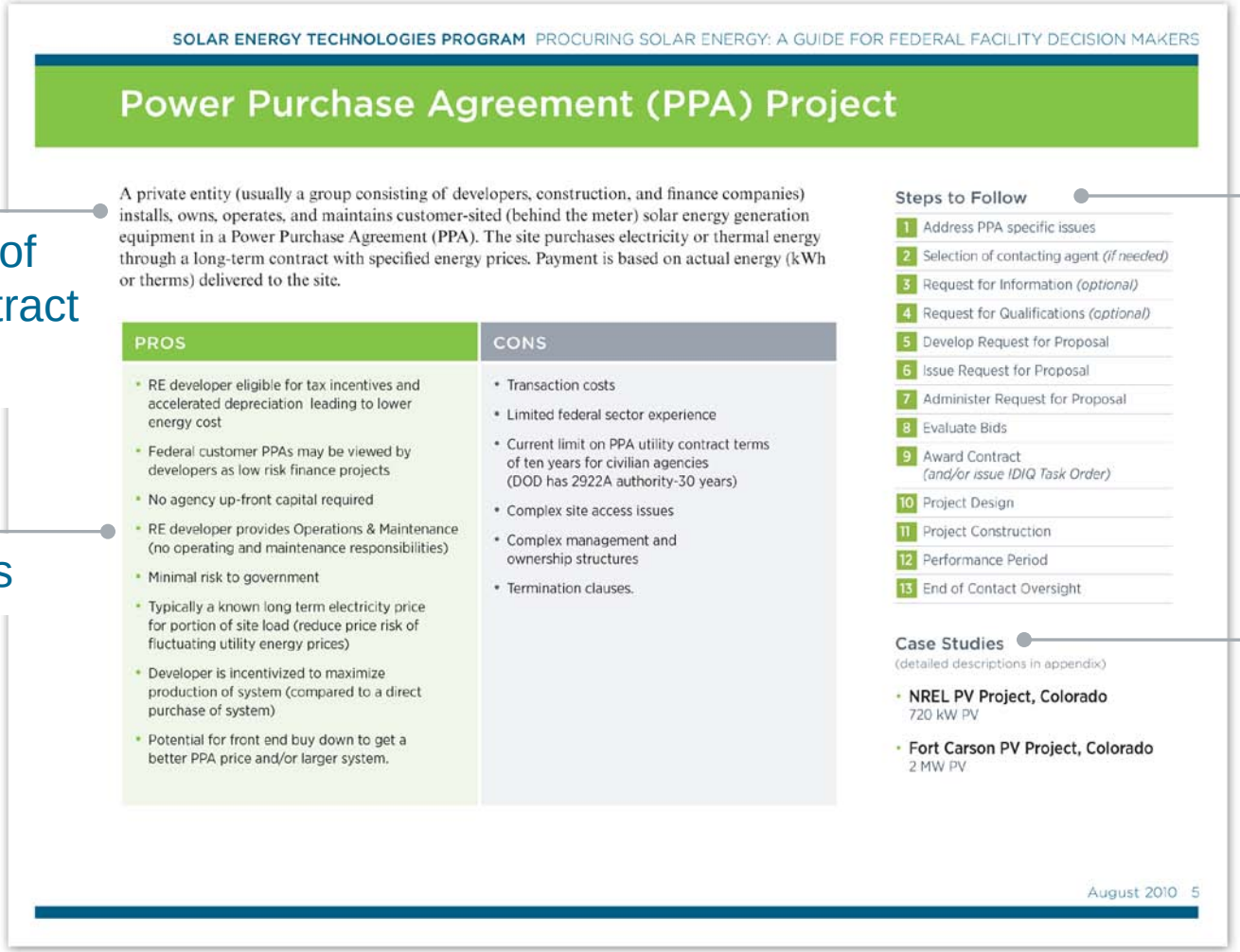
Example Finance/Contract Mechanism



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Power Purchase Agreement (PPA) Project

A private entity (usually a group consisting of developers, construction, and finance companies) installs, owns, operates, and maintains customer-sited (behind the meter) solar energy generation equipment in a Power Purchase Agreement (PPA). The site purchases electricity or thermal energy through a long-term contract with specified energy prices. Payment is based on actual energy (kWh or therms) delivered to the site.

PROS	CONS
• RE developer eligible for tax incentives and accelerated depreciation leading to lower energy cost	• Transaction costs
• Federal customer PPAs may be viewed by developers as low risk finance projects	• Limited federal sector experience
• No agency up-front capital required	• Current limit on PPA utility contract terms of ten years for civilian agencies (DOD has 2922A authority-30 years)
• RE developer provides Operations & Maintenance (no operating and maintenance responsibilities)	• Complex site access issues
• Minimal risk to government	• Complex management and ownership structures
• Typically a known long term electricity price for portion of site load (reduce price risk of fluctuating utility energy prices)	• Termination clauses.
• Developer is incentivized to maximize production of system (compared to a direct purchase of system)	
• Potential for front end buy down to get a better PPA price and/or larger system.	

Steps to Follow

1. Address PPA specific issues
2. Selection of contacting agent *(if needed)*
3. Request for Information *(optional)*
4. Request for Qualifications *(optional)*
5. Develop Request for Proposal
6. Issue Request for Proposal
7. Administer Request for Proposal
8. Evaluate Bids
9. Award Contract *(and/or issue IDIQ Task Order)*
10. Project Design
11. Project Construction
12. Performance Period
13. End of Contact Oversight

Case Studies

(detailed descriptions in appendix)

- **NREL PV Project, Colorado** 720 kW PV
- **Fort Carson PV Project, Colorado** 2 MW PV

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Description of finance/contract mechanism

Pros & Cons

Itemized Steps

List of Case Studies

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Appendix


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Photo Credit: Northern Power Systems

Solar Technology Overview

Checklists

- Self-Guided Solar Screening
- Solar Screening Evaluation Checklist
- PV Project Design Evaluation Checklist
- PV Commissioning Checklist

Case Studies for each Financing Mechanism

- Agency Funded
- PPA
- ESPC
- UESC
- EUL

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Available Training & Contacts

FEMP Events, Webinars, Workshops and Trainings:
http://www1.eere.energy.gov/femp/news/events.html

FEMP Training Site:
http://www1.eere.energy.gov/femp/services/training.html

FEMP Case Studies:
http://www1.eere.energy.gov/femp/technologies/renewable_casestudies.html

EERE Information Center: 877-EERE-INF or 877-337-3463

Thank You

www.solar.energy.gov/federal_guide/

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